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They are certainly not algae, but spores of pteridophytes, a group which constituted an important part of the paleozoic vascular flora, and which has always been regarded as responsible, to a large extent at least, for the ordinary coals. This conclusion sets aside the algal hypothesis of the origin of petroleum and other substances, and refers such products to the waxy and resinous spores of pteridophytes, "laid down on the bottoms of the shallow lakes of the Coal Period. These lacustrine layers, either as cannels, bog-heads, or bituminous shales, according to the sporal composition and the admixture of earthy matter, are the mother substance of petroleum. Pressure and temperature, either separately or combined, in the presence of permeable strata, have brought about the distillation of petroleum from such deposits."—J. M. C.

Alkaloids and algae.—COMÈRE⁹ finds that some alkaloids can be used by algae as the only source of nitrogen. The algae used were *Ulothrix subtilis* and *Spirogyra crassa*, and the alkaloids were morphine hydrogen chloride, atropine sulphate, cocaine hydrogen chloride, quinine hydrogen chloride, and strychnine sulphate. The alkaloids were added gradually as assimilated, so that the plants were never subjected to strong solutions. *Ulothrix* proved to be far more amenable to cultural conditions than *Spirogyra*. It can readily assimilate morphine and atropine, and less readily cocaine; *Spirogyra* showed less marked assimilation of these compounds. Quinine could not be assimilated by either, and strychnine was very toxic to both, even in great dilution. Some of the alkaloids, therefore, are not aplastic.—WILLIAM CROCKER.

Response to light.—DANGEARD¹⁰ finds that in three species of *Chromatium* studied (*C. Okenii*, *C. vinosum*, *C. sp.?*) there is a marked accumulation in the longer rays of the spectrum as observed by ENGELMANN. In the infra-red there are two regions of accumulation; one in ray lengths 0.840–0.820 μ , and the second at 0.800–0.790 μ . In the visible spectrum there is a zone of accumulation between the *B* and *C* lines, and a second one extending to each side of the *D* line. A green bacterium that he recently described also responds to longer rays; it accumulates in a zone with ray lengths 0.770–0.670 μ . Some other experiments, claimed to show the relatively great effectiveness of long rays in assimilation and growth, add nothing of value to our knowledge.—WILLIAM CROCKER.

⁹ COMÈRE, JOSEPH, Du rôle des alcaloides dans la nutrition des algues. Bull. Soc. Bot. France 57: 277–280. 1910.

¹⁰ DANGEARD, P. A., Phototactisme, assimilation, phénomènes de croissance. Bull. Soc. Bot. France 57: 315–319. 1910.